

1 **CLAIMS**

2 1. One or more computer readable media containing one or more
3 operating system programs, said one or more programs comprising:

4 interacting with a user to manage computer resources;

5 said interacting including graphically browsing different computer resource
6 areas that contain the resources managed by the operating system;

7 representing resources within the resource areas as icons, the resources
8 being physically moveable to and from at least some of the resource areas by
9 moving the icons;

10 at least one of the resource areas being a particular type of writable resource
11 area to which resources can be written;

12 in response to browsing said at least one of the resource areas, defining a
13 graphical staging area into which a user may move icons representing resources
14 that are to be written to said at least one of the resource areas;

15 delaying any writing of the resources represented in the staging area until
16 detecting a user attempt to remove a storage medium from said at least one of the
17 resource areas;

18 in response to detecting the user attempt to remove the storage medium,
19 identifying resources represented by the icons in the staging area and writing such
20 identified resources to the storage medium.

21
22 2. One or more computer readable media as recited in claim 1, the
23 programs further comprising:

24 prior to interacting with the user, pre-allocating a contiguous portion of
25 mass storage for future use when writing identified resources to the storage

1 medium, wherein the pre-allocated portion is large enough to create a data image
2 that is to be created on the storage medium;

3 prior to writing the staged resources to the storage medium, creating a data
4 image in the pre-allocated portion of mass storage;

5 wherein writing the identified resources comprises writing the data image
6 to the storage medium.

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8 **3.** One or more computer readable media as recited in claim 1, the
9 programs further comprising, upon writing the identified resources, writing
10 additional resources not specifically designated by the user for use in conjunction
11 with the identified resources after they are written.

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13 **4.** One or more computer readable media as recited in claim 1, the
14 programs further comprising, upon writing the identified resources:

15 automatically identifying a viewer program that is compatible with one or
16 more of the identified resources;

17 writing the viewer program to the storage medium for use in conjunction
18 with the identified resources after they are written.

19

20 **5.** One or more computer readable media as recited in claim 1, the
21 programs further comprising altering the icons in the staging area to indicate status
22 of the staged resources.

1 6. One or more computer readable media as recited in claim 27, the
2 programs further comprising altering the icons in the staging area with status
3 overlays to indicate status of the staged resources.

4

5 7. One or more computer readable media as recited in claim 1, the
6 programs further comprising altering the icons in the staging area with status
7 overlays to indicate status of the staged resources, the status overlays including a
8 staged status overlay and an in-process status overlay.

9

10 8. One or more computer readable media as recited in claim 1, the
11 programs further comprising defining a contextually sensitive command area and
12 displaying a delete resource command option in the contextually sensitive
13 command area if and only if the particular type of writable resource area is
14 rewritable.

15

16 9. One or more computer readable media as recited in claim 1, wherein
17 designating a resource for representation in the graphical staging area creates a
18 reference to said designated resource rather than a copy of said designated
19 resource, the programs further comprising dereferencing said reference during
20 writing to write a current version of the designated resource, including any
21 changes to the designated resource subsequent to designating it and prior to
22 writing it.

1 **10.** One or more computer readable media as recited in claim 1, the
2 programs further comprising:

3 prior to interacting with the user, pre-allocating a contiguous portion of
4 mass storage for future use when writing identified resources to the storage
5 medium, wherein the pre-allocated portion is large enough to create a data image
6 that is to be created on the storage medium;

7 prior to writing the staged resources to the storage medium, creating a data
8 image in the pre-allocated portion of mass storage;

9 wherein writing the identified resources comprises writing the data image
10 to the storage medium.

11
12 **11.** One or more computer readable media as recited in claim 1, the
13 programs further comprising:

14 determining whether any changes are made to the identified resources prior
15 to writing them;

16 if a change is made to a particular identified resource prior to writing,
17 creating an unchanged copy of the particular identified resource;

18 writing the unchanged copy to the storage medium in place of the particular
19 identified resource, wherein the unchanged copy does not include changes to the
20 particular identified resource subsequent to designating it and prior to writing it.

21
22 **12.** A method comprising:

23 dynamically accepting designations from a computer user of a plurality of
24 resources to be written to a removable storage medium;

25 detecting an attempt to remove the storage medium;

1 in response to detecting a user attempt to remove the storage medium, batch
2 writing the designated resources to the storage medium.

3
4 **13.** A method as recited in claim 12, wherein the batch writing is
5 performed before removing the storage medium;

6
7 **14.** A method as recited in claim 12, further comprising, in response to
8 detecting a user attempt to remove the storage medium, prompting the computer
9 user to replace the storage medium prior to batch writing the designated resources
10 to the storage medium.

11
12 **15.** A method as recited in claim 12, further comprising, upon writing
13 the identified resources, writing additional resources not specifically designated by
14 the user for use in conjunction with the identified resources after they are written.

15
16 **16.** A method as recited in claim 12, further comprising, upon writing
17 the identified resources:

18 automatically identifying a viewer program that is compatible with one or
19 more of the identified resources;

20 writing the viewer program to the storage medium for use in conjunction
21 with the identified resources after they are written.

22
23 **17.** A graphical user interface for a computer, comprising:
24 an operating system that interacts with a user to manage computer
25 resources;

1 the operating system having a resource browser that is responsive to user
2 input to explore resource areas containing different types of resources and to
3 display icons that represent the resources, at least some of the resources being
4 physically moveable to and from the resource areas by moving their corresponding
5 icons;

6 at least one of the resource areas being a staged-write resource area;

7 the resource browser being configured to define a stored resource display
8 area and a staged resource display area, the stored resource display area showing
9 icons of resources that are already stored in the staged-write resource area, the
10 staged resource display area showing icons of staged resources that the user
11 desires to be written to the writable resource area but that have not yet been
12 written to said writable resource area.

13

14 **18.** A graphical user interface as recited in claim 17, the resource
15 browser being further configured to commence writing the staged resources to the
16 writable resource area upon detecting attempted removal of a storage medium
17 corresponding to the writable resource area.

18

19 **19.** A graphical user interface as recited in claim 17, wherein:
20 the resource browser is further configured, upon writing the staged
21 resources, to write additional resources not specifically designated by the user for
22 use in conjunction with the staged resources after they are written.

1 **20.** A graphical user interface as recited in 17, further comprising, upon
2 writing the staged resources:

3 automatically identifying a viewer program that is compatible with one or
4 more of the staged resources;

5 writing the viewer program to the storage medium for use in conjunction
6 with the staged resources after they are written.

7

8 **21.** A graphical user interface as recited in claim 17, wherein the
9 resource browser alters the icons to indicate the status of the staged resources.

10

11 **22.** A graphical user interface as recited in claim 17, wherein:
12 some of the icons have status overlays corresponding to a staged status and
13 an in-process status.

14

15 **23.** A graphical user interface as recited in claim 17, further comprising
16 a contextually sensitive command area, wherein the resource browser includes a
17 delete resource command in the contextually sensitive command area if and only if
18 the particular type of writable resource area is rewritable.

1 **24.** A graphical user interface as recited in claim 17, wherein
2 designating a resource for representation in the staged resource display area
3 creates a reference to said designated resource rather than a copy of said
4 designated resource, said reference being dereferenced during writing to write a
5 current version of the designated resource, including any changes to the designated
6 resource subsequent to designating it and prior to writing it.

7

8 **25.** A graphical user interface as recited in claim 17, wherein:
9 prior to interacting with the user, the operating system pre-allocates a
10 contiguous portion of mass storage for future use when writing identified
11 resources to the writable resource area, wherein the pre-allocated portion is large
12 enough to create a data image that is to be created on the writable resource area;

13 prior to writing the staged resources to the writable resource area, creating a
14 data image in the pre-allocated portion of mass storage.

15

16 **26.** A graphical user interface as recited in claim 17, wherein the
17 operating system monitors staged resources for changes and creates an unchanged
18 copy of any changed staged resource for subsequent writing to the writable
19 resource area in place of the changed staged resource.

20

21 **27.** A graphical user interface for a computer, comprising:
22 an operating system that interacts with a user to manage computer
23 resources;
24 the operating system having a resource browser that is responsive to user
25 input to explore resource areas containing different types of resources and to

1 display icons that represent the resources, at least some of the resources being
2 physically moveable to and from the resource areas by moving their corresponding
3 icons;

4 at least one of the resource areas being a staged-write resource area;

5 the resource browser being configured to display icons of stored resources
6 that are already stored in the staged-write resource area and icons of staged
7 resources that the user desires to be written to the staged-write resource area but
8 that have not yet been written to said staged-write resource area.

9 wherein the resource browser shows different representations of the
10 resources depending upon whether they are stored resources or staged resources;

11 the resource browser being responsive to a user action to initiate a batch
12 write of the staged resources to the staged-write resource area.

13

14 **28.** A graphical user interface as recited in claim 27, wherein the user
15 action comprises attempting to remove a storage medium corresponding to the
16 staged-write resource area.

17

18 **29.** A graphical user interface as recited in claim 27, wherein:

19 the resource browser is further configured, upon writing the staged
20 resources, to write additional resources not specifically designated by the user for
21 use in conjunction with the staged resources after they are written.

1 **30.** A graphical user interface as recited in claim 27, further comprising,
2 upon writing the staged resources:

3 automatically identifying a viewer program that is compatible with one or
4 more of the staged resources;

5 writing the viewer program to the storage medium for use in conjunction
6 with the staged resources after they are written.

7

8 **31.** A graphical user interface as recited in claim 27, further comprising
9 a contextually sensitive command menu, the menu including a delete resource
10 command if and only if the particular type of writable resource area is rewritable.

11

12 **32.** A graphical user interface as recited in claim 27, wherein
13 designating a resource for staging creates a reference to said designated resource
14 rather than a copy of said designated resource, said reference being dereferenced
15 during writing to write a current version of the designated resource, including any
16 changes to the designated resource subsequent to designating it and prior to
17 writing it.

18

19 **33.** A graphical user interface as recited in claim 27, wherein:

20 prior to interacting with a user to manage computer resources, the operating
21 system pre-allocates a contiguous portion of mass storage for future use, wherein
22 the pre-allocated portion is large enough to create a data image that is to be created
23 on the staged-write resource area;

24 prior to writing the staged resources to the writable resource area, creating a
25 data image in the pre-allocated portion of mass storage.

1 **34.** A graphical user interface as recited in claim 27, wherein:

2 designating a resource for staging creates a reference to said designated
3 resource rather than a copy of said designated resource;

4 in response to any subsequent change to the designated resource the
5 operating system creates an unchanged copy of the designated resource, said
6 reference being changed to indicated the unchanged copy;

7 said reference being dereferenced during writing to write the designated
8 resource or its unchanged copy.

9
10 **35.** One or more computer readable media containing a computer
11 program, the computer program comprising:

12 accepting designations of different resources by a user for staging prior to
13 writing to a removable storage medium;

14 graphically representing any resources that are already stored on the
15 removable storage medium and any resources that are staged but not written to the
16 removable storage medium;

17 detecting a user attempt to remove the removable storage media;

18 in response to detecting the user attempt to remove the removable storage
19 media, writing any staged resources to the removable storage media.

1 **36.** One or more computer readable media as recited in claim 35, the
2 program further comprising, upon writing the staged resources, writing additional
3 resources not specifically designated by a user, for use in conjunction with the
4 staged resources after they are written.

5

6 **37.** One or more computer readable media as recited in claim 35, the
7 program further comprising altering representations of the resources to indicate the
8 status of the staged resources.

9

10 **38.** One or more computer readable media as recited in claim 35, the
11 program further comprising displaying a delete resource command in a
12 contextually sensitive command menu if and only if the particular type of writable
13 resource area is rewritable.

14

15 **39.** One or more computer readable media as recited in claim 35, the
16 program further comprising:

17 for any staged resource that is changed prior to writing, creating an
18 unchanged copy of the staged resource;

19 writing the unchanged copy in place of the changed staged resource.

20

21 **40.** One or more computer readable media as recited in claim 35, further
22 comprising:

23 prior to accepting designations by users, pre-allocating a contiguous portion
24 of mass storage for use when writing staged resources, wherein the pre-allocated

1 portion is large enough to create an image of data to be written to the removable
2 storage medium;

3 prior to writing the staged resources to the removable storage media,
4 creating a write image in the pre-allocated portion of mass storage;

5 wherein writing the staged resources comprises writing the write image to
6 the removable storage medium.

7

8 **41.** An operating system embodied on one or more computer readable
9 media, the operating system performing actions comprising:

10 saving resources in response to requests from application programs;

11 in response to receiving a request from an application program to save a
12 resource on a staged-write storage medium, noting that resource as being staged
13 without writing the resource;

14 in response to a user initiation, writing any staged resources to the storage
15 medium.

16

17 **42.** An operating system as recited in claim 41, wherein the user
18 initiation comprises attempting to remove the storage medium.

19

20 **43.** An operating system as recited in claim 41, the actions further
21 comprising, upon writing the staged resources, writing additional resources not
22 specifically designated by a user, for use in conjunction with the staged resources
23 after they are written.

1 **44.** An operating system as recited in claim 41, the actions further
2 comprising:

3 for any staged resource that is changed prior to writing, creating an
4 unchanged copy of the staged resource;

5 writing the unchanged copy in place of the changed staged resource.

6

7 **45.** An operating system as recited in claim 41, further comprising:

8 prior to receiving requests from application programs, pre-allocating a
9 contiguous portion of mass storage for use when writing staged resources to the
10 storage media, wherein the pre-allocated portion is large enough to create an
11 image of data to be written to the storage medium;

12 prior to writing the staged resources to the storage media, creating a write
13 image in the pre-allocated portion of mass storage;

14 wherein writing the staged resources comprises writing the write image to
15 the storage medium.

16

17 **46.** One or more computer readable media containing a computer
18 program, the computer program comprising:

19 accepting designations of different resources for staging prior to writing to
20 a removable storage medium;

21 storing corresponding references to the designated resources;

22 for any designated resource that is changed prior to writing, creating an
23 unchanged copy of the staged resource and changing the corresponding reference
24 to indicate the unchanged copy;

1 in response to an instruction to write to the removable storage medium,
2 writing any designated resources and any unchanged copies indicated by the
3 stored references.

4

5 **47.** One or more computer readable media as recited in claim 46, the
6 program further comprising:

7 prior to receiving designations of different resources, pre-allocating a
8 contiguous portion of mass storage for use when writing staged resources to the
9 removable storage media, wherein the pre-allocated portion is large enough to
10 create an image of data to be written to the removable storage medium;

11 prior to writing the resources to the storage media, creating a write image in
12 the pre-allocated portion of mass storage;

13 wherein writing the staged resources comprises writing the write image to
14 the storage medium.